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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/696,204	10/29/2003	Ying Zhou	ITL.1024US (P16711)	7312
21906	7590	05/03/2006	EXAMINER	
TROP PRUNER & HU, PC 8554 KATY FREEWAY SUITE 100 HOUSTON, TX 77024			ESTRADA, MICHELLE	
			ART UNIT	PAPER NUMBER
			2823	

DATE MAILED: 05/03/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/696,204

Applicant(s)

ZHOU ET AL.

Examiner

Michelle Estrada

Art Unit

2823

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 09 February 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-6, 8-11, 15-21, 27, 28, 30, 31, 36 and 38-40 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 10, 11, 15-21, 27, 28, 30, 31, 36 and 38-40 is/are allowed.
- 6) ☒ Claim(s) 1-4 and 8 is/are rejected.
- 7) ☒ Claim(s) 5, 6, 9 and 10 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Claim Objections***

Claim 6 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. The limitation of claim 6 has been added to claim 1 by the amendment filed 2/9/06.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tijburg et al. (5,969,419) in view of the following comments.

With respect to claim 1, Tijburg et al. disclose soaking a substrate (12) having a dielectric (22) deposited thereon in a salt solution, said dielectric having a first dielectric constant; and depositing an oxide on said dielectric, said oxide having a second dielectric constant different from the first dielectric constant; and adjusting the pH of the salt solution (Col. 3, lines 55-60).

One of ordinary skill in the art would have been led to the recited concentration of the reactants in the solution through routine experimentation to achieve a desired layer associated characteristics. In addition, the selection of concentration of the reactants in the solution, its obvious because it is a matter of determining optimum process conditions by routine experimentation with a limited number of species of result effective variables. These claims are prima facie obvious without showing that the claimed ranges achieve unexpected results relative to the prior art range. In re Woodruff, 16 USPQ2d 1935, 1937 (Fed. Cir. 1990). See also In re Huang, 40 USPQ2d 1685, 1688 (Fed. Cir. 1996)(claimed ranges or a result effective variable, which do not overlap the prior art ranges, are unpatentable unless they produce a new and unexpected result which is different in kind and not merely in degree from the results of the prior art). See also In re Boesch, 205 USPQ 215 (CCPA) (discovery of optimum value of result effective variable in known process is ordinarily within skill or art) and In re Aller, 105 USPQ 233 (CCPA 1995) (selection of optimum ranges within prior art general conditions is obvious).

Note that the specification contains no disclosure of either the critical nature of the claimed concentration of the reactants in the solution or any unexpected results arising therefrom. Where patentability is said to be based upon particular chosen concentration of the reactants in the solution or upon another variable recited in a claim, the Applicant must show that the chosen concentration of the reactants in the solution are critical. In re Woodruff, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).

With respect to claim 8, Tijburg et al. disclose having a silicon oxide formed in the substrate and then immersing the substrate in the salt solution.

Claims 1-4 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yao (6,679,996) in view of Tijburg et al. (5,969,419).

With respect to claim 1, Yao discloses soaking a substrate (1) having a dielectric (2) deposited thereon in a salt solution (Col. 7, lines 12-25), said dielectric having a first dielectric constant; and depositing an oxide (3) on said dielectric, said oxide having a second dielectric constant different from the first dielectric constant.

Yao does not specifically disclose adjusting the pH of the salt solution.

Tijburg et al. disclose having a substrate with a dielectric formed thereon; immersing the substrate in a salt solution and adjusting pH (Col. 3, lines 55-60).

It would have been within the scope of one of ordinary skill in the art to combine the teachings of Yao and Tijburg et al. to enable the pH-adjusting step of Tijburg et al. to be performed in the process of Yao to obtain optimum complexing of the metal ion (Col. 3, lines 55-60).

One of ordinary skill in the art would have been led to the recited concentration of the reactants in the solution through routine experimentation to achieve a desired layer associated characteristics. In addition, the selection of concentration of the reactants in the solution, its obvious because it is a matter of determining optimum process conditions by routine experimentation with a limited number of species of result effective variables. These claims are prima facie obvious without showing that the claimed

ranges achieve unexpected results relative to the prior art range. In re Woodruff, 16 USPQ2d 1935, 1937 (Fed. Cir. 1990). See also In re Huang, 40 USPQ2d 1685, 1688 (Fed. Cir. 1996)(claimed ranges or a result effective variable, which do not overlap the prior art ranges, are unpatentable unless they produce a new and unexpected result which is different in kind and not merely in degree from the results of the prior art). See also In re Boesch, 205 USPQ 215 (CCPA) (discovery of optimum value of result effective variable in known process is ordinarily within skill or art) and In re Aller, 105 USPQ 233 (CCPA 1995) (selection of optimum ranges within prior art general conditions is obvious).

Note that the specification contains no disclosure of either the critical nature of the claimed concentration of the reactants in the solution or any unexpected results arising therefrom. Where patentability is said to be based upon particular chosen concentration of the reactants in the solution or upon another variable recited in a claim, the Applicant must show that the chosen concentration of the reactants in the solution are critical. In re Woodruff, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).

With respect to claim 2, Yao discloses wherein depositing an oxide on said dielectric includes depositing aluminum oxide on said dielectric (Col. 9, lines 17-32), the Examiner clarifies that Yao discloses using a fluoride ion capturing agent added to the aqueous solution to deposit the layer of a corresponding metal oxide or a solid solution thereof, one of these ion capturing agent can be aluminum chloride, therefore aluminum

oxide will be formed on the dielectric layer since aluminum oxide is the corresponding metal oxide of aluminum chloride (Col. 9, lines 17-33).

With respect to claim 3, Yao discloses wherein soaking said substrate in said salt solution includes soaking said substrate in a salt solution comprising an aluminum salt (Col. 9, lines 29-32 and 58-61).

With respect to claim 4, Yao discloses wherein soaking said substrate in said salt solution comprising said aluminum salt includes soaking said substrate in a aqueous solution comprising the capturing agent, therefore the salt solution comprises aluminum chloride dissolved in water (Col. 7, lines 15-25).

With respect to claim 8, Tijburg et al. disclose having a silicon oxide formed in the substrate and then immersing the substrate in the salt solution.  
, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).

#### ***Allowable Subject Matter***

Claims 5, 9 and 10 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 11, 15-21, 27, 28, 30, 31, 36, 38-40 are allowed.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michelle Estrada whose telephone number is 571-272-1858. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Smith can be reached on 571-272-1907. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 571-272-2800.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Michelle Estrada  
Primary Examiner  
Art Unit 2823